



Fact Sheet

SC Department of Health and Environmental Control • 2600 Bull Street • www.scdhec.gov • Promoting and protecting the health of the public and the environment

Health Effects of Lead

Lead is a natural element that is found in our environment. This metal has many good uses, but may be harmful to humans in many ways. Lead can get into the bloodstream through the mouth (ingestion) or through the lungs (inhalation). Lead exposure is a big concern among children under 6 years of age because the brain and nervous system of young children are still developing and because children absorb more lead than adults do. Lead exposure is also a concern to pregnant women and nursing mothers because they can pass lead to their unborn or nursing babies.

Most cases of lead poisoning in adults are a result of occupational exposure or hobbies.

Nutrition plays a key role in determining how much lead a person absorbs. A person who eats a healthy diet with appropriate levels of iron, calcium, and Vitamin C is less likely to absorb lead than a person who does not have a healthy diet or who lacks iron or calcium.

Health effects in adults are usually not seen until lead levels are in the 30s or 40s (mg/dL).

Health effects in children may include stomach cramps, lethargy, and loss of hearing acuity.

Health effects in adults may include impotence, neuropathy, high blood pressure, and kidney disease.

There are many sources of lead. The major source is from deteriorating lead-based paints that were used in homes and buildings before 1978. Since 1978, residential paints containing more than 0.06 percent lead are no longer sold in the U.S., but some older houses still have lead paint in them. Another major source of lead can be vinyl miniblinds. Other sources include some toys and jewelry, cosmetics, folk medicines and even lead-glazed ceramic ware, pottery and leaded crystal that can contaminate food and liquids stored in them.

Dust can become contaminated with lead when lead-based paints breakdown over time. Unfortunately, once lead contaminates soil or dust, it stays there until it is removed. Children are exposed to these sources of lead more often than adults because any dust or soil that is contaminated with lead settles on surfaces such as windowsills and floors. This can then get onto the hands or toys of children as they play. Young children commonly put their hands and toys into their mouths, and they swallow the dust or soil. Vinyl miniblinds break down due to sunlight and heat and can release lead-contaminated dust. Children who touch the miniblinds and put their fingers into their mouths may ingest the lead-contaminated dust. Children who teethe on vinyl miniblinds may be exposed as well.

Another possible source of lead is drinking water. Drinking water can become contaminated with lead when lead in older faucets, pipes or pipe soldering leaches into water that flows through the pipes. Even though the use of lead in pipes, solder and other components used in public water systems and residential and nonresidential plumbing has been restricted by national laws since 1986, lead may still be found in pipes today. The amount of lead in water depends on many different things. These include the types and amounts of minerals in the water, how long the water stays in the pipes, the amount of wear in the pipes, the water's acidity, and its temperature. Lead can leach into water at any temperature, but the amount of lead can be much greater when the water is hot or warm. Only special filters are certified for lead removal (From EPA: Lead In Your Home: A Parent's Reference Guide, EPA 747-B-98-002, June 1998). These filters can be very effective.

The only way to effectively determine the amount of lead in a person's body is through a blood lead test. The blood lead levels that have been established by health officials as the level of concern is 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$) and above for children under the age of 6, and 25 $\mu\text{g}/\text{dL}$ for adults. The S.C. level of concern for adults is more protective than the national level. Different blood levels of lead cause different types of damage to the body. High levels of lead, 40 $\mu\text{g}/\text{dL}$ of blood or greater, can make children very sick. Even at this level, some children may not have visible signs of lead poisoning. This is the level where some children may develop learning disabilities, attention deficit disorder, and decreased intelligence as well as speech, language and behavior problems. Some research on about 200 children has shown that even at lead levels below 10 $\mu\text{g}/\text{dL}$, some children may have subtle changes in intelligence.

Blood lead levels above 45 $\mu\text{g}/\text{dL}$ in children have been associated with visible signs of lead poisoning. Symptoms range from serious low red blood cell numbers (anemia), stomach and muscle cramps, weakness, headaches, hearing loss, kidney problems, confusion and loss of coordination. Blood lead levels above 80 $\mu\text{g}/\text{dL}$ in children cause severe toxicity and may cause convulsions, irreversible intellectual and behavioral impairments, coma and even death.

These are the actions that you should take when your doctor tells you what your child's blood level is.

If your doctor tells you that the results are...	You should...
0-9 micrograms per deciliter ($\mu\text{g}/\text{dL}$)	Continue routine testing. Not considered lead poisoning.
10-14 ($\mu\text{g}/\text{dL}$)	Rescreen frequently and consult with your doctor about prevention measures.
15-19 ($\mu\text{g}/\text{dL}$)	Determine the lead source and seek advice about proper diet.
20-44 ($\mu\text{g}/\text{dL}$)	Obtain a medical checkup, determine the lead source, and seek advice about proper diet. Children may need medical treatment (chelation).
Above 44 ($\mu\text{g}/\text{dL}$)	Get immediate care. Considered serious lead poisoning.

From EPA: Lead In Your Home: A Parent's Reference Guide, EPA 747-B-98-002, June 1998